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FUEL MANAGEMENT AND FIRE SUPPRESSION SPECIALIST REPORT

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ABSTRACT

Issues addressed in this analysis are framed by the National Fire Plan and an analysis of fire cause. The indicator for addressing National Fire Plan is Ability to Treat Potential Treatment Areas, which are defined as wildland-urban interface and municipal watersheds. Uncharacteristic or Unwanted Wildland Fire is used to define hazardous fuels. Unwanted Wildland Fire fuels are described in Idaho's County Wildfire Protection Plans. Uncharacteristic Wildland Fire fuels are characterized by Fire Regime Condition Class.

Overall for IRAs, 70 percent of the acres are in Condition Class 2 and five percent are in Condition Class 3. Wildland-urban interface areas have a fewer acres in Condition Class 2 and more acres in Condition Class 3 compared to the IRAs as a whole. Municipal water-supply areas have a greater proportion of Condition Class 2 acres than overall for the IRAs.

Ability to Treat is described by access and tools. Access is related to the allowances for road construction or reconstruction and tools are related to the ability to use mechanical and prescribed fire versus prescribed fire alone. Mechanical treatments are assumed to provide a more precise hazardous fuels treatment, in a shorter timeframe than using prescribed fire alone. Of particular concern are very hazardous fuels near wildland-urban interface. However, the ability to treat mechanically is limited in areas without access. Prescribed fire is assumed to be less precise, but can be applied farther from roads.

An analysis of fire cause relative to IRAs revealed that more starts and acres burned are attributed to humans outside IRAs. Literature indicates that access may increase the number of starts and acres burned by humans. The indicator for this assessment is Access Restricted and Access Not Restricted.

INTRODUCTION

Linkage to the 2001 Roadless Rule Final Environmental Impact Statement

The 2000 Fuel Management and Fire Suppression Specialist's report for the 2001 Roadless Final Environmental Impact Statement (2000 Fuel and Fire Report) serves as the starting point for the evaluation of the alternatives. This included a review of the issues and indicators to determine whether they are still valid as described, and therefore could be carried forward as originally developed or needed modification based on a changed condition. The issues and indicators described in the 2000 Fuel and Fire Report were framed within the context of addressing 1) a prohibition on road construction and reconstruction, and 2) the tradeoff between commodity and stewardship timber harvest. A variety of land management personnel and other

experts, and Forest Service EISs and policy documents were consulted to help identify issues relative to the two topics. The key issues identified through this process were:

- Fire suppression costs
- Prescribed fire and fuel management costs
- Wildfire size
- Public safety
- Wildland-urban interface
- Ability to complete fuel management tasks
- Firefighter safety
- Uncharacteristic wildfire effects
- Fire occurrence
- Fire cause (human versus lightning ignitions)
- Mechanical fuel treatment and fuel management work
- Geographic distribution of fire management activities (Alaska, the West, the South, the East)
- Severity of wildland fires
- Global warming and wildland fires

From this list, the following components were established as criteria to evaluate the consequences of the alternatives relative to the fuel management and fire suppression programs. The issues were synthesized into the following:

- Large Wildland Fires
    - Escaped Wildland Fire
    - Firefighter Safety
    - Severity of Wildland Fire
        - Potential Treatment Areas
- Wildland-Urban Interface
- Cost of Hazardous Fuel Management
- Annual Acreage Burned by Wildland Fire
- Fire Pre-Suppression and Emergency Fire Suppression Costs

Large Wildland Fires were assessed in the 2000 Fire and Fuels Specialist Report based on number of starts, size, and cause. An analysis of number of starts and acres burned by small (<1,000 acres) and large (>1,000 acres) wildfires in or outside of Inventoried Roadless Areas (IRAs) revealed that there were several more fires and acres burned outside compared to inside of IRAs (Table 1). Data from the national forests in Idaho was similar but less striking for small (<1,000 acres) fires (Table 2). For small (<1,000 acres) fires, the number and total acres burned per year were similar. For large fires, average number of fires inside and outside IRAs was the same. However, total acres burned per year by large (>1,000 acres) wildfires were three times greater outside than inside IRAs (Table 2). Nationally twice as many acres burned per year outside of IRAs (Table 1).

Table 1—Number of Small (<1,000 acres) and Large (≥ to 1,000 acres) WildFires and Total Acres Burned Per Year Inside and Outside of IRAs for All Forest Service Regions (1986-1996)

	Inside IRAs		Outside IRAs[1]		Total	
	Number of Fires Per Year	Total Acres Burned Per Year	Number of Fires Per Year	Total Acres Burned Per Year	Number of Fires Per Year	Total Acres Burned Per Year
Fires Less Than 1,000 Acres	1,642	13,000	8,398	68,400	10,040	81,400
Fires Equal to or Greater Than 1,000 Acres	19	172,200	41	345,200	60	517,400
Total	1,661	185,200	8,439	413,600	10,100	598,800

[1]*Does not include Designated Wilderness areas*

Table 2—Number of Small (<1,000 acres) and Large (≥ to 1,000 acres) WildFires and Total Acres Burned Per Year Inside and Outside of IRAs for National Forests in Idaho (1986-1996)

	Inside IRAs		Outside IRAs[1]		Total	
	Number of Fires Per Year	Total Acres Burned Per Year	Number of Fires Per Year	Total Acres Burned Per Year	Number of Fires Per Year	Total Acres Burned Per Year
Fires Less Than 1,000 Acres	406	2,464	562	2,921	968	5,385
Fires Equal to or Greater Than 1,000 Acres	5	47,113	5	142,546	10	195,024
Total	411	49,577	567	145,467	978	200,409

[1]*Does not include Designated Wilderness areas*

The 2000 Fuel and Fire Report also assessed number of starts and acres burned by cause to determine if there was any relationship in and out of IRAs. The national assessment showed that number of starts and acres burned per year for both lightning and human-caused starts was greater outside IRAs than inside (Table 3). The same was true for Idaho though there was not much difference for lightning-caused fires (Table 4). In Idaho, the land-base inside IRAs is slightly less than the land-base outside of IRAs (8,763,330 acres versus 8,842,930 acres) but this difference doesn't fully account for the greater number of lightning starts and acres burned outside of IRAs.

Table 3—Number of Starts and Acres Burned Per Year by Cause (Lightning and Human) Inside and Outside of IRAs for All Forest Service Regions (1986-1996)

	Lightning-caused			Human-caused		
	Number of Starts Per Year	Acres Burned Per Year	Average Acres Burned Per Start	Number of Starts Per Year	Acres Burned Per Year	Average Acres Burned Per Start
In IRAs	1,239	143,100	115	422	42,100	100
Outside IRAs	4,202	221,100	53	4,236	192,500	45

Table 4-- Number of Starts and Acres Burned Per Year by Cause (Lightning and Human) Inside and Outside of IRAs for National Forests in Idaho (1986-1996)

	Lightning-caused			Human-caused		
	Number of Starts Per Year	Acres Burned Per Year	Average Acres Burned Per Start	Number of Starts Per Year	Acres Burned Per Year	Average Acres Burned Per Start
In IRAs	358	47,527	133	56	2,051	37
Outside IRAs	440	51,303	117	127	94,164	740

Nationally lighting accounted for about 75 percent of the total number of fires that started in IRAs (Table 3). In Idaho, about 86 percent of the fires in IRAs were from lightning. Nationally outside of IRAs, lightning and human-caused starts were equal while in Idaho, lightning accounted for 78 percent of the starts. Nationally and in Idaho acres burned per start from lightning were greater in IRAs compared to outside. This was also the case nationally for human-caused fires. However, for human-caused starts, data for Idaho was different than nationally as 20 times more acres were burned by human-caused starts outside of IRAs (Table 4).

For Large Wildland Fires, the 2000 Fuel and Fire Report Table 6 showed that roads or lack of roads or availability of timber harvest or lack of timber harvest did not contribute to more and larger fires in IRAs compared to outside of IRAs. In fact, the statistics show the opposite. The data for Idaho is similar to the national data and therefore the same conclusions appear to apply. This conclusion was further validated based on available literature reviewed to determine what effects roads (or lack of roads) and timber harvest (or lack of timber harvest) have on fire occurrence, fire cause, fire size, firefighting effectiveness, fire suppression costs, firefighter safety, and fuel management effectiveness. For roads, it was concluded that there is little literature dealing with the consequences of building a road solely for fire suppression or fuel management purposes. McHugh and Finnney (2003) assessed road density and burn severity on the 2002 Hayman Fire in Colorado and found no correlation relative to fire suppression. In a summary of scientific findings for the Interior Columbia River Basin (USDA Forest Service 1996), researchers wrote: "The occurrence and intensity of wildfires are correlated with lightning storm routes, fuels, local wind patterns, terrain complexity, and roads. Wildland areas with complex terrain or a moderate or high road density have moderate or higher risk of wildfires…Areas with fuels, roads, and complex terrain that are on lightning storm routes have the highest risk of wildfire." This relationship appears in the Idaho statistics which show more starts and acres burned outside of IRAs, which presumably have more roads. This information was used to develop indicators for Fire Prevention.

The literature is inconclusive regarding what effect timber harvesting has on determining the ultimate size of a large wildland fire particularly when burning under severe weather conditions (Martinson et al. 2003, Stratton 2004). However, there were conclusions that could be drawn regarding roads and timber harvest, and the ability to

change wildland fire effects. This information was used to develop indicators for addressing Severity of Wildland Fire.

Based on information relative to the assessment for Large Wildland Fires and the literature, it was concluded in the 2000 Fuel and Fire Report that there would be no differences in Escaped Wildland Fire, Firefighter Safety, Annual Acreage Burned by Wildland Fire, and Emergency Fire Suppression Costs between alternatives in IRAs. Therefore these components will not be carried forward in this assessment. Fire Pre-Suppression includes the organization and resources that Forests use to manage wildland fires including the Fire Prevention program. As concluded in the 2000 Fuel and Fire Report, there would be no differences for most of the program elements under Pre-Suppression except for Fire Prevention. Because it appears there is a relationship between roads and the number of starts and acres burned caused by humans, Fire Prevention will be carried forward into the analysis.

Most of the remaining components (Severity of Wildland Fire, Potential Treatment Areas, Wildland-Urban Interface, and Cost of Hazardous Fuel Management) relate to the potential effects of wildland fire. Forest Service policy is to allow fire to play a natural role where appropriate. However, vegetative conditions in some areas are such that there is high potential for having uncharacteristic (inappropriate) wildland fires. The 2000 Fuel and Fire Report laid out this concern relative to the uncharacteristic wildfire using the *Coarse-Scale Spatial Data for Wildland Fire and Fuel Management* (Hardy et al. 2000) and *Protecting People and Sustaining Resources in Fire-Adapted Ecosystems: A Cohesive Strategy (Cohesive Strategy)* (Laverty and Williams 2000). The indicator for hazardous vegetative condition was the Fire Regime Condition Class (FRCC) (Hardy et al. 2000), which is an indicator of the ecological effects of fire.

The 2000 Fuel and Fire Report characterized the Fire Regime Condition Classes for IRAs and used this information to address road construction and timber harvest. Since that time, the strategy for managing uncharacteristic fuels has expanded under the Healthy Forest Initiative (HFI), initiated by President Bush in August 2002, and the Healthy Forest Restoration Act (HFRA) (P.L. 108-148), approved by Congress in December 2003. These and other documents addressing wildland fire are collectively referred to as the National Fire Plan. The national implementation strategy, titled *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-year Strategy Implementation Plan* was updated December 2006 (USDA and USDI) as was the *Idaho Statewide Implementation Strategy for the National Fire Plan*. Both address concerns about the effects of uncharacteristic wildland fire on the environment including municipal water supplies. In addition, the National Fire Plan also addresses "unwanted wildfire effects" from unwanted wildland fire which is defined as any wildland fire in an undesirable location or season, or burning at an undesirable intensity, spread rate, or direction (USDA and USDI 2003). In general, wildfire is unwanted in the wildland-urban because of risks to firefighter and public safety and private property.

For the wildland-urban interface, the most desirable type of wildland fires are those of low intensity and severity that can be safely managed with minimal effort. Changing the distribution and continuity of vegetation and fuels on the landscape, particularly in areas where fires have the potential to be stand-replacing, can also aid fire suppression efforts by providing fuel breaks or other kinds of conditions where small fires or portions of large fires can be safely suppressed (Deeming 1990, Finney 2000, Graham et al. 1999). This requires surface fuel loadings that produce low flame lengths and vegetative conditions that reduce the chance of fire moving from the ground into the tree crowns. In the case of Fire Regime I, Fire Regime II, and in some vegetation types that fall into Fire Regime III, characteristic wildland fire is of low intensity and severity. However, in other vegetation types in Fire Regime III, and in Fire Regime IV and V, high intensity stand-replacement fire is characteristic.

In the 2000 Fuel and Fire Report wildland-urban interface was described based on five population classes developed from the ambient population information in the LandScan Global Population Database for 1998 (Lockheed Martin Energy Research Corporation 1999). Since this Report, states have been defining wildland-urban interface per direction from the National Fire Plan. This includes development of Community Wildfire Protection Plans. To facilitate this process in Idaho, the Idaho State Fire Plan Working Group (State Working Group) was formed. The State Working Group is comprised of individuals representing state and federal agencies, counties, tribes, and non-governmental organizations, and provides the key link between national and local levels of government to implement the National Fire Plan. The State Working Group also provides leadership in the development of Community Wildfire Protection Plans. In Idaho, these plans are developed and updated at the county level, and are therefore are referred to as County Wildfire Protection Plans. Currently, all counties in Idaho have CWPPs (State of Idaho 2007). Information from the State Working was used in development of the Idaho Roadless Rule. This information was used in place of the ambient population information to produce an analysis like that described in the 2000 Fuel and Fire Report.

In the 2000 Fuel and Fire Report, concerns regarding Large Wildland Fire were based on priorities described in the *Cohesive Strategy*, which are threats to public safety, private property, water quality, or Threatened and Endangered species habitats. As described in the *Cohesive Strategy*, unless these concerns overlapped IRAs, IRAs would be a low priority for fuel treatment because higher priority areas are more common outside roadless areas. These same priorities have carried into the National Fire Plan. From 2001 through 2006 in Idaho, about half (51 percent) of the acres treated for hazardous fuels forest-wide were in WUI (Figure 1). Where treatments were conducted, mechanical methods were more often used in WUI than outside WUI. Prescribed fire was used much more often applied outside of WUI. Mechanical treatments likely occur more often in WUI because conditions can be altered more rapidly with mechanically compared to prescribed fire alone, and prescribed fire can be undesirable in WUI

because of concerns from adjacent private property owners about risk of escape and concerns about smoke.

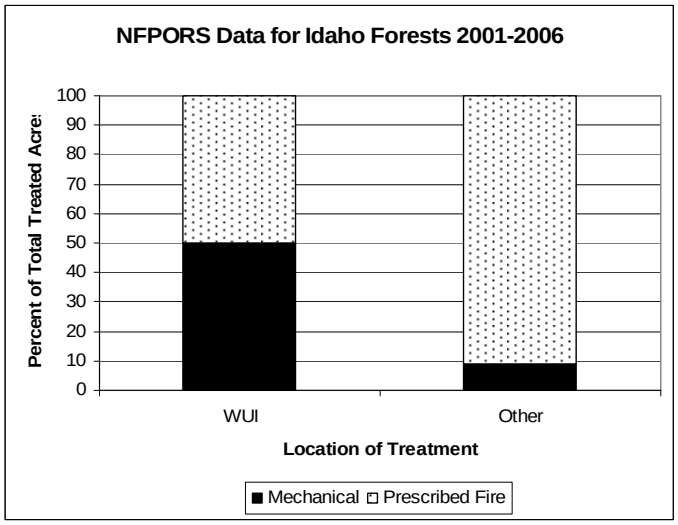

Figure 1—Acres Treated Mechanically and With Prescribed Fire in Wildland-Urban Interface and Other on Ten National Forests in Idaho from 2001 through 2006. Data from the National Fire Plan Operations and Reporting System (NFPORS) (contained in spreadsheet Idaho_nfpors_fuels_acres)

In Idaho fuels treatments outside of WUI have generally been for municipal watersheds or restoration of ecosystems. Though National Fire Plan identified hazardous fuels relative to Threatened and Endangered Species habitats, in Idaho such treatments have generally not been undertaken exclusively for addressing Threatened and Endangered Species habitat (Deirdre Dether, personal communication, 2007). In some cases though, particularly for treatments that address risks of Uncharacteristic Wildland Fire, there are often secondary benefits to Threatened and Endangered species.

Issues and Indicators

Large Wildland Fires

The component of Large Wildland Fires from the 2000 Fuel and Fire Report is addressed in this analysis as Uncharacteristic or Unwanted Wildland Fire. This analysis assesses the ability to undertake treatments to mitigate hazards that contribute to the risk of Large Wildland Fire based on the two topic areas (road construction and reconstruction, and timber cutting, sale, or removal).

Alternatives are compared based on "Ability to Treat Potential Treatment Areas". Potential Treatment Areas are: 1) where wildland-urban interface overlaps IRAs and 2) in IRAs that contribute to municipal water-supplies. The Ability to Treat is interpreted from the direction relative to road construction or reconstruction and timber cutting, sale, or removal contained in the 2001 Roadless Rule, the Existing Plans, and the Idaho Roadless Rule.

Selection of wildland-urban interface and municipal water-supply areas as the Potential Treatment Areas does not imply that these are the only areas within IRAs that could be treated for hazardous fuels. Rather, it reflects that most current priorities for hazardous fuels management as described by the National Fire Plan.

ABILITY TO TREAT

Ability to Treat is based on access and tools as they would apply to hazardous fuels management (ability to address Uncharacteristic or Unwanted Wildland Fire hazard). Access is described as Restricted, Variable, Under Limited Exceptions or Not Restricted. This was determined based on how each alternative addresses road construction or reconstruction specific to hazardous fuels. For tools, prescribed fire and mechanical are the most commonly applied methods for addressing hazardous fuels. Mechanical hazardous fuels treatments generally include commercial and non-commercial timber harvest, thinning, chipping, and masticating (Graham et al. 2006, Rummer 2006). Tools are described as Prescribed Fire the Only Tool Available, Prescribed Fire and Mechanical Tools Available to Treat Uncharacteristic Wildland Fire, Prescribed Fire and Mechanical Tools for Various Purposes, and Prescribed Fire and Mechanical to Treat Unwanted Wildland Fire. Table 5 displays the combinations of access and tools used to compare the alternatives. The Ability to Treat assignments in Table 5 apply to both wildland-urban interface and municipal watersheds. The interpretation of each alternative to the description of the indicator in Table 5 is located in the assumptions. For the 2001 Roadless Rule, the interpretation applies to the all IRA acres. For the Existing Plan and Idaho Roadless Rule, the interpretation applies to acres assigned to the Management Themes. The results of the analysis displayed in the Tables 12, 13, 14, 15, and 16 are contained in the spreadsheet Ability_to_treat_categories_summary.xls.

Table 5—Description of Ability To Treat Inventoried Roadless Areas and Application to Alternatives

	Alternatives		
Management Themes	**2001 Roadless Rule**	**Existing Plans**	**Idaho Roadless Rule**
Wild Land Recreation	Prescribed Fire and Mechanical Tools Available to Treat Uncharacteristic Wildland Fire, Access Restricted	Prescribed Fire the Only Tool Available, Access Restricted	Prescribed Fire the Only Tool Available, Access Restricted
Primitive and Special Areas of Historic or Tribal Significance		Prescribed Fire and Mechanical Tools Available for Various Purposes, Access Restricted	Prescribed Fire and Mechanical Tools Available to Treat Unwanted Wildland Fire, Access Restricted
Backcountry Restoration		Prescribed Fire and Mechanical Tools Available for Various Purposes, Access Variable	Prescribed Fire and Mechanical Tools Available to Treat Unwanted Wildland Fire, Access Under Limited Exceptions
General Forest, Rangeland, Grassland		Prescribed Fire and Mechanical Tools Available for Various Purposes, Access Not Restricted	Prescribed Fire and Mechanical Tools Available to Treat Unwanted Wildland Fire, Access Not Restricted

Fire Prevention

Fire Prevention is evaluated based on access. The indicator is number of acres assigned to management themes with Access Restricted versus Access Not Restricted. Assumptions relative to the indicator are in the assumptions related to access (roads) section. The assignments described in Table 5 provided the basis for the categories. Access Variable was assigned to Access Not Restricted for the purposes of this assessment. Access Restricted and Access Not Restricted were the same as Table 5.

Assumptions

Ability to Treat

Interpretation of Ability to Treat for the 2001 Roadless Rule—The 2001 Roadless Rule was interpreted as not allowing road construction or reconstruction for hazardous fuels treatments. Page 2-7, Volume 1, Chapter 2 discussion for Alternative 3 (the selected alternative) states that road construction or reconstruction in support of treatments that reduce the risk of uncharacteristic wildland fire would not be allowed in IRAs. Therefore, access is described as Restricted (Table 5).

For tools, the 2001 Roadless Rule allows the cutting, sale, or removal of generally small diameter timber if it will maintain or restore the characteristics of ecosystem composition and structure, such as to reduce the risk of uncharacteristic wildland fire effects, within the natural range of variability created by the natural fire regimes. This is defined as Uncharacteristic Wildland Fire. Therefore, tools are described as Prescribed Fire and Mechanical Tools to Treat Uncharacteristic Wildland Fire (Table 5).

Interpretation of Ability to Treat for the Existing Plans—Prescriptions in Existing Plans were cross-walked to the Idaho Roadless Rule's Management Themes as a method for capturing Existing Plan intent. For hazardous fuels management it was generally assumed that the access and tools available under Existing Plans are the same as those for the Management Theme to which the prescription was cross-walked. However, in some cases the intent of Forest Plan prescriptions varied from the intent of the Idaho Roadless Rule's Management Themes. For example, the purpose of some of the Caribou Forest Plan prescriptions that allowed access and tools similar to the Backcountry Restoration Management Theme was generally for habitat restoration rather than for reducing the significant risk of wildfire effects. Therefore Existing Plans were assigned to Prescribed Fire and Mechanical Available for Various Purposes. This was also the case in Forest Plan Special Areas.

Ability to construct or reconstruct roads for hazardous fuels treatments was also variable in Existing Plans relative to the Idaho Roadless Rule Management Themes. For example, on the Boise, Payette, and Sawtooth National Forests, one of the prescriptions cross-walked into the Backcountry Restoration Management Theme allows for hazardous fuels treatments to protect human life, structures, and investments from wildland fire. This is consistent with reducing the significant risk of wildfire.

However, unlike the Idaho Roadless Rule Management Theme for Backcountry Restoration, road construction or reconstruction for treatments that reduce this risk are not allowed. Therefore, access for the Existing Plans for Backcountry Restoration was defined as Access Variable since it varies by plan. Access for Existing Plans cross-walked to the Wildland Recreation, Primitive, and General Forest, Rangeland, and Grassland were assumed to be consistent with the Idaho Roadless Rule Management Themes.

Interpretation of Ability to Treat for Idaho Roadless Rule—Access under the Idaho Roadless Rule varies by Management Theme (Table 5). For Wild Land Recreation and Primitive, road construction and reconstruction are only allowed in limited situations unrelated to hazardous fuels management. Therefore, access was interpreted as Restricted for these two themes (Table 5). In Backcountry Restoration, the Idaho Roadless Rule allows road construction or reconstruction to protect health and safety in cases of significant risk or imminent threat of flood, fire or other catastrophic event. This includes hazardous fuels treatments that benefit wildland-urban interface and municipal water-supplies. Therefore, for this Management Theme, access was interpreted as allowed Under Limited Exceptions for hazardous fuels management (Table 5). Under the General Forest, Rangeland, and Grassland Theme, there are no conditions limiting road construction or reconstruction and access is assigned to Not Restricted for hazardous fuels management.

Like access, tools vary by Management Theme. For Wild Land Recreation, timber cutting, sale, or removal of timber is prohibited except for limited purposes not related to hazardous fuels management. There is no limitation on prescribed fire and it was assumed this tool would be used to treat hazardous fuels where feasible. Therefore, this theme was assigned to Prescribed Fire the Only Tool Available. For Primitive and Backcountry Restoration, timber cutting, sale, or removal is allowed where it maintains or improves roadless characteristics and reduces the significant risk of wildfire. For this assessment, this was defined as Unwanted Wildland Fire. This would include hazardous fuels treatments that reduce wildfire risks in or adjacent to wildland-urban interface and municipal watersheds. Therefore, these Management Themes were assigned to Prescribed Fire and Mechanical Tools Available to Treat Unwanted Wildland Fire (Table 5). Unwanted Wildland Fire includes Uncharacteristic Wildland Fire. The General Forest, Rangeland, and Grassland theme was interpreted as having the full range of tools available for the full range of hazardous fuels treatment needs and was assigned to the same Ability to Treat as Backcountry Restoration.

ASSUMPTIONS RELATED TO TOOLS

The primary purpose of hazardous fuel management is to reduce the occurrence of uncharacteristic or unwanted wildland fire (Davis and Cooper 1963; Wood 1982; Van Wagtendonk 1996).

Hazardous fuels can be accomplished with prescribed fire alone (Swetnam 2000). However, treatments using only prescribed fire may take longer to achieve the desired effect than hazardous fuels treatments using mechanical, or mechanical and prescribed fire in combination (Mutch 1994). This can occur due to the current vegetative conditions and the ability to target the "problem" condition, availability of burning windows, and the need to apply repeated treatments due to past fire exclusion. Density management or ladder fuel treatments using mechanical methods are more reliable in that they are more precise and usually are accomplished in a shorter timeframe. However, whether mechanical treatments reduce the intensity and severity of wildland fire is disputed and uncertain. Hazardous fuel conditions can be abated provided the ladder fuels and unutilized coarse and fine fuels (natural and activity fuels) are removed from the site. Conversely, mechanical treatments can sometimes elevate fire hazard by increasing dead-ground fuel, removing larger fire resistant trees, and leaving an understory of ladder fuels (Graham et al. 1999; Sackett et al. 1996; Barrett 1994; Feeney et al. 2000; Weatherspoon 2000). Therefore the following is assumed for mechanical fuel treatments:

- where conducted to reduce the risk of Uncharacteristic Wildland Fire, the action would improve the Fire Regime Condition Class and treatments would be conducted to mitigate natural fuels if necessary, and activity fuels;
- where conducted to reduce the risk of Uncharacteristic or Unwanted Wildland Fire treatments would be conducted to mitigate natural fuels if necessary, and activity fuels.

ASSUMPTIONS RELATED TO ACCESS (ROADS)

Only authorized roads are used for hazardous fuel management.

The cost of using prescribed fire is more expensive where access is limited (Brown 1991). These higher costs are associated with factors such as transportation of personnel to conduct operations and a greater reliance on aerial (e.g. helicopter) versus hand-ignition.

The cost of mechanical treatments is more expensive where access is limited. This is due to a variety of factors including harvesting systems and treatment of activity fuels. Where access is limited, timber harvesting is often conducted with helicopter yarding, which is more expensive than ground-based yarding systems. In addition, hazardous fuels treatments are more effective where natural and activity fuels, particularly the smaller coarse size class (greater than 3 inches and less than 8 inches), are mitigated. Where the treatment is targeting smaller diameter material, whole tree yarding is the most effective method for reducing activity fuels within treatment areas. However, this is more expensive where helicopter yarding is employed. Post-treatment activity fuel abatement in helicopter areas is also more expensive than in areas with better access.

The costs of road construction and maintenance were not factored into this analysis as they vary widely depending on terrain, road design, and associated mitigation

measures. Roads used for fuel treatment are often constructed for other purposes. Therefore this analysis did not consider road construction and maintenance as a fuels treatment cost (Saveland 1987).

The incidence of human-caused starts is assumed to be higher in areas that could be roaded compared to areas that remain unroaded. This is based on the national and Idaho 1986-1996 data that showed that number of human-caused starts was greater in roaded versus unroaded areas.

Assumptions related to hazardous fuels management for unwanted wildland fire

Treatments for wildland-urban interface protection may create conditions within a landscape that are not natural. This includes features such as shaded fuelbreaks, or areas where fuels are chipped or masticated. It may also include the removal of ladder fuels in vegetation types where such conditions contributed to a natural stand-replacing fire regime. While this type of fire would be part of the natural fire regime, it would be undesirable in areas such as wildland-urban interface.

Information Used

Fire Occurrence—

Fire occurrence data was determined from a dataset provided by the State Working Group. The data covered a greater number of years than were displayed. The timeframes used for this assessment were matched to the data available nationally from the 2000 Fuel and Fire Report. Cause was recoded to a numeric value to assist in the analysis. Human-caused ignitions are wildland fires started by campfires, smoking, debris burning, incendiary, equipment use, railroads, and children. Fires of undetermined causes were included in the human-caused category for Table 3, but were not included in the assessment described in Table 4 because in some cases the cause was not listed. Designated wilderness was also not included in the analysis to be consistent with the 2000 Fuel and Fire Report.

The data set is:

FIRE_OCCURRENECES_with_wilderness.xls

Summary spreadsheet for the above:

FIRE_OCCURRENCES_with_wilderness_analysis.xls

Ability to Treat and Fire Prevention—

Source data for acres were derived from GIS overlays converted to spreadsheets. The original datasets for were:

- Ability_to_treat_FP_08222007.xls

- Ability_to_treat_SP_08222007.xls
- Summary spreadsheets for the above:
- Roadless_fr_frcc_FP
- Roadless_fr_frcc_SP
- Information from the summary spreadsheets above is displayed in Appendix A.
- The wildland-urban interface is described in: wui_metadata.doc. Municipal water-supply metadata is in the project file.

The Fire Regime Condition Class information was derived from the LANDFIRE Rapid Assessment (RA). Idaho is covered by the Northern and Central Rockies, Great Basin, and Northwest LANDFIRE mapzones though the majority of the state is in the Northern and Central Rockies. The RA process was a regional-scale effort to produce maps and models of potential natural vegetation groups, reference fire regimes, and fire regime condition class for the conterminous United States. RA data is intended for national- to regional-scale strategic planning, broad ecological assessments, and resource allocation. RA products are designed to fill data needs ahead of the release of LANDFIRE National products and will be replaced by LANDFIRE National data as they become available. Fire Regime Condition Class for Idaho was not released in time to use for this assessment.

AFFECTED ENVIRONMENT

The Analysis Area for the comparison of alternatives is the Inventoried Roadless Areas in the State of Idaho. The Affected Environment for the WUI and municipal water-supply areas are the wildland-urban interface and municipal water-supply areas within the IRAs. The Affected Environment for Fire Prevention is the Analysis Area. Fire Regime Condition Class is characterized individually for the Analysis Area, the wildland-urban interface, and the municipal water-supply areas. The FRCC within the Analysis Area and Affected Environment are used to help set context for the alternatives.

The natural fire regimes classified through the LANDFIRE Rapid Assessment are used to describe the natural role of fire. The Hardy et al. (2000) Fire Regime classification describes natural fire in terms of fire return interval and amount of replacement of the upper life-form. Fire Regimes are classified into five categories:

I – Frequent, low to mixed severity: (0-35 year return interval, less than 75 percent of the upper life-form replaced)

II – Frequent, high severity: (0-35 year return interval, greater than 75 percent of the upper life-from replaced)

III – Less frequent, mixed severity: (35-100+ year return interval, less than 75 percent of the upper life-form replaced)

IV – Less frequent, high severity: (35-100+ year return interval, greater than 75 percent of the upper life-form replaced)

V – Infrequent, high severity: (200+ year return interval, greater than 75 percent of the upper life-form replaced)

Of the total IRA acres, 94 percent of the area is classified into Fire Regimes. The unclassified areas are rock, water, snow or ice, and bare soil, or are developed areas such as transportation corridors, mines, quarries, home sites, or other kinds of features that are not described by the Fire Regimes. Of the area classified into Fire Regimes, most falls into Fire Regimes I, III, or IV (Table 6). Of this, Fire Regime IV makes 42 percent of the acres followed by Fire Regime III (34 percent). Fire Regime I comprises 23 percent. Less than 2 percent of the area falls into Fire Regimes II or V.

Table 6—Acres of Fire Regime and Percent of Total Acres by Fire Regime for Idaho Inventoried Roadless Areas

Fire Regime for IRAs	Acres	Percent of Total Acres
FR I	1,978,365	21
FR II	44,828	<1
FR III	2,948,168	32
FR IV	3,719,373	40
FR V	72,452	<1
Unclassified	540,301	6
Total	9,303,630	

Condition Class (Hardy et al. 2000) is a measure of the departure between the way fires would behave within the Fire Regime currently compared to naturally. The variety of conditions including ecosystem composition, structure, and function that resulted from the natural fire regimes are described as the natural range of variability. The time period for natural is pre-European settlement (also defined as historical). There are a variety of factors that contribute to altered fire regimes including past timber harvesting, livestock grazing, conversion of lands to agriculture, fire suppression and fire exclusion, introduction of exotics organisms including plants and diseases, etc. These factors generally result in changes to key ecosystem components such as vegetative species composition, structural stage, age, canopy closure, landscape pattern, and fuel loadings, which in turn affect fire frequency, intensity and severity, and patch size. There are three Condition Classes defined as:

- Condition Class 1 – Little departure from the natural fire regime and natural range of variability; risk of losing key ecosystem components is low;
- Condition Class 2 – Moderately departed from the natural fire regime and natural range of variability; risk of losing key ecosystem components is moderate;
- Condition Class 3 – Highly departed from natural fire regime and natural range of variability; risk of losing key ecosystem components is high.

The majority of the IRA acres (70 percent) are classified as Condition Class 2 (Table 7). The majority of the acres of all Fire Regimes except FR V are in Condition Class 2. In FR V, most of the acres are in Condition Class 1. Fire Regime II has the most acres in Condition Class 3; in this Fire Regime about half the acres fall into Condition Class 3 while the other half fall into Condition Class 2.

Table 7—Acres of Fire Regime and Condition Class and Percent of Total Acres (in parentheses) for Idaho Inventoried Roadless Areas

IRAs		Condition Class Acres (Percent of Fire Regime Acres)		
Fire Regime	Acres	1	2	3
FR I	1,978,365	250,624 (13)	1,528,169 (77)	199,578 (10)
FR II	44,828	8 (<1)	23,234 (52)	21,586 (48)
FR III	2,948,168	1,255,017 (43)	1,581,353 (54)	86,798 (3)
FR IV	3,719,373	566,766 (15)	3,019,202 (81)	133,405 (4)
FR V	72,452	64,720 (89)	7,736 (11)	6 (<1)
Unclassified	540,301			
Total	9,303,630	2,137,129 (25)	6,159,684 (70)	441,473 (5)

Wildland-Urban Interface

Wildland-urban interface overlaps 12 percent of the IRA acres. In general, wildfire is unwanted in WUI and hazardous fuels treatments to reduce the risk are generally those that provide for conditions where firefighters can safely suppress fire or where the risk of stand-replacing wildland fire is reduced. Fire Regimes for the WUI areas (Table 8) are somewhat different from the IRA area as a whole (Table 6) in that there are more acres in Fire Regimes I and IV and fewer acres in Fire Regime III. Condition Classes within Fire Regimes are also somewhat different. Generally there are fewer acres in Condition Classes 1 and 2 and more acres in Condition Class 3 in WUI (Table 9) than in the IRAs as a whole (Table 7). The only exceptions are Fire Regimes IV and V. Overall, WUI areas have more Condition Class 3 (14%) than the IRAs as a whole (5%) and less Condition Class I (13 percent for WUI versus 25% for IRAs).

Table 8—Acres of Fire Regime and Percent of Total Acres by Fire Regime for Wildland-Urban Interface in Idaho Inventoried Roadless Areas

Fire Regime for WUI	Acres	Percent of Total Acres
FR I	319,987	30%
FR II	8,431	<1%
FR III	234,626	22%
FR IV	481,890	45%
FR V	4,563	<1%
Unclassified	31,699	2%
Total	1,081,199	

Table 9—Acres of Fire Regime and Condition Class and Percent of Total Acres for Wildland-Urban Interface in Idaho Inventoried Roadless Areas

WUI		Condition Class Acres (Percent of Fire Regime Acres)		
Fire Regime	Acres	1	2	3
FR I	319,987	35,818 (11%)	234,136 (73%)	50,033 (16%)
FR II	8,431	8 (0%)	4,006 (48%)	4,417 (52%)
FR III	234,626	79,821 (34%)	115,020 (49%)	39,788 (17%)
FR IV	481,890	77,244 (16%)	348,593 (72%)	56,052 (12%)
FR V	4,563	2,773 (61%)	1,790 (39%)	0 (0%)
Unclassified	31,699			
Total	1,081,199	195,664 (19%)	703,545 (67%)	150,291 (14%)

Municipal Water-Supply Area

Municipal water-supplies occur over 5 percent of the IRA acres. Twenty-five percent of the acres that provide municipal water from IRAs overlap wildland-urban interface; therefore 75 percent are in IRAs outside of WUI. Generally, high intensity or severity wildfire is undesirable in areas that contribute to municipal water-supplies. The Healthy Forest Restoration Act defines hazardous fuels for municipal water-supplies as Fire Regime Condition Class 3 or Fire Regime I, II, or III, Condition Class 2 or 3.

Generally the Fire Regimes for areas in IRAs that contribute to municipal water-supplies (Table 10) are more similar to the IRAs (Table 6) as a whole than to areas defined as wildland-urban interface (Table 8). The only difference is that there is a slightly higher percentage of Fire Regime IV and slightly less Fire Regime III in municipal water-supply areas than in the IRAs overall. However, there are differences in the Condition Classes. Municipal water-supply areas have the least Condition Class 1 acres (Table 11) relative to the IRAs (Table 7) and WUI (Table 9). The amount of Condition Class 3 in municipal water-supply areas is similar to the IRAs and less than the wildland-urban interface. The municipal water-supply areas have the most Condition Class 2 compared to the IRAs and the WUI. Based on the HFRA definition of hazardous fuels in municipal watersheds, 46 percent of the acres are in Condition Class 3 or Fire Regime I, II, or III Condition Class 2.

Table 10--Acres of Fire Regime and Percent of Total Acres by Fire Regime for Municipal Water-Supply Areas in Idaho Inventoried Roadless Areas

Fire Regime for Municipal Water-Supply Areas	Acres	Percent of Total Acres
FR I	91,555	22%
FR II	2,699	<1%
FR III	121,304	30%
FR IV	176,974	43%
FR V	426	0%
Unclassified	16,122	4%
Total	409,080	

Table 11—Acres of Fire Regime and Condition Class and Percent of Total Acres for Municipal Water-Supply Areas in Idaho Inventoried Roadless Areas

Municipal Water-Supply Areas		Condition Class Acres (Percent of Fire Regime Acres)		
Fire Regime	Acres	1	2	3
FR I	91,555	2,764 (3%)	74,717 (82%)	14,074 (15%)
FR II	2,699	0	0	2,699 (100%)
FR III	121,304	40,331 (33%)	80,648 (66%)	325 (0%)
FR IV	176,974	6,013 (3%)	162,994 (92%)	7,967 (5%)
FR V	426	414 (97%)	12 (3%)	0 (0%)
Unclassified	16,122			
Total	409,080	49,522 (13%)	318,371 (81%)	24,065 (6%)

ENVIRONMENTAL CONSEQUENCES

Environmental Effects Common to All Alternatives

The effect of prescribed fire would be the same for the same vegetation, prescriptions, topography, soils, etc across the alternatives. The same is true for mechanical treatments such as timber cutting, chipping, masticating, etc in that the effects would be the same across the alternatives where the same vegetation is treated on similar topography. Differences between the alternatives are primarily in terms of which tools (prescribed fire or prescribed fire/mechanical) are allowed as there are differences in effects between prescribed fire versus mechanical, and whether or not road construction/reconstruction is allowed. Another difference between the alternatives is the objectives for treating hazardous fuels as this determines the outcomes of the treatments. The vegetative structure, composition, and landscape pattern that results from treatments to reduce uncharacteristic wildland fire may be different than those to reduce unwanted wildland fire.

Wildland fires are managed using the Appropriate Management Response (AMR). AMR can include wildland fire use for resource benefits where allowed under current or proposed Forest Plans. Neither the Idaho Roadless Rule nor the 2001 Roadless Rule affect the wildland fire use programs on any forest. By policy, an unwanted wildland fire is a wildfire. Wildfires include fires started by humans other than agency personnel, lightning-ignited fires that are not managed for wildland fire use, or prescribed and wildland fires managed for fire use that are no longer meeting the prescriptive criteria. Fire suppression includes a full range of options, from very resource intensive (large numbers of personnel and equipment) to less intensive activities (few personnel and minimal equipment). The AMR decision to use one or a combination of options over others depends on many factors, including threats to life, property, and investments; fuel and weather conditions; natural resource concerns; terrain; and available resources such as personnel and equipment.

The alternatives do not directly affect the strategies or tactics undertaken for wildland fire suppression since roads are not constructed or reconstruction (though maintenance

activities may be conducted) and timber harvesting is not undertaken during wildfire suppression. The alternatives indirectly affect fire suppression in that different tactics might be used in roaded versus unroaded areas (McHugh and Finney 2003). However, this difference cannot be segregated from all the other factors that contribute to decision-making regarding strategies and tactics related to any one wildfire. There has been an assumption that wildfire size in IRAs may be larger than outside of IRAs because there is a greater desire outside of IRAs to keep wildfires small due to values at risk, or that when multiple starts occur more resources are prioritized to ignitions. The national data may support this claim since for lightning and human-caused wildfires acres burned per start were about two times greater inside IRAs than outside (Table 3). For Idaho, acres burned per start from lightning were slightly greater inside IRAs compared to outside (Table 4). However acres burned per start from human-caused fire were 20 times greater outside of IRAs. Therefore the Idaho data does not support this assumption. In any case, the alternatives would not have a direct effect on AMR. However, there may be an indirect effect from the alternatives as they relate to the ability to alter conditions that contribute to fire behavior, which in part affects firefighter safety and fire suppression success. In IRAs this most often occurs in or adjacent to wildland-urban interface or municipal watersheds due to values at risk. There is therefore, an indirect relationship between the Ability to Treat Potential Treatment Areas and AMR. There is a direct relationship between fuels management program and Ability to Treat as described above.

Ability to Treat Hazardous Fuels in Wildland-Urban Interface

2001 Roadless Rule

Under the 2001 Roadless Rule, Ability to Treat Wildland-Urban Interface is defined as Prescribed Fire and Mechanical Tools Available, Access Restricted for WUI all Inventoried Roadless Areas. Hazardous fuels are defined as those that contribute to Uncharacteristic Wildland Fire which are described using Fire Regime Condition Class. In any Fire Regime, acres classified as Condition Class 2 or Condition Class 3 are at risk of burning uncharacteristically in the event of a wildland fire. Under the National Fire Plan, hazardous fuels can be defined more broadly for wildland-urban interface at the local level through CWPPs, and therefore can include a greater range of fuel conditions than those that define Uncharacteristic Wildland Fire under the 2001 Roadless Rule.

Based on the Fire Regime Condition Class definitions, the majority (81 percent) of the WUI acres in IRAs fall into Condition Class 2 or 3 (Table 9). Therefore, under the 2001 Roadless Rule, much of the WUI could be treated to reduce the risk of Uncharacteristic Wildland Fire since so much of the area is in an uncharacteristic condition. In Fire Regimes I, II, and III reducing the risk of Uncharacteristic Wildland Fire would also benefit WUI. This would occur because the natural fire regimes in these areas are non-lethal or mixed. Non-lethal fires pose much lower risks to firefighters and can be more easily directed than stand-replacing (lethal) fires.

In ecosystems with mixed fire regimes, landscapes are highly diverse with mosaics of high and low fuels. In the mixed fire regimes (II and III) in WUI, fuel mosaics that would burn with non-lethal fire behavior would be consistent with the natural fire regime. However, in Fire Regimes IV and V, characteristic wildland fire is stand-replacing and therefore in this case, maintaining or restoring ecosystem characteristics to the range of variability that occurs under the natural disturbance regimes may still produce fuels that are hazardous to WUI. Treatments in the short-term could be conducted that would reduce the risk, but over time, maintaining these kinds of fuels would not be consistent with natural processes. In these types of Fire Regimes, treatments that benefit WUI, such as fuel breaks or stand structures and species compositions that may benefit WUI are not ecologically appropriate. These types of treatments would be inconsistent with the 2001 Roadless Rule.

Because access is restricted for hazardous fuels treatments under the 2001 Roadless Rule, mechanical treatments would occur only in limited areas due to a general paucity of existing roads. The most hazardous conditions are those described by Condition Class 3. In IRAs, these areas are likely in Condition Class 3 because they are very dense and have high surface and vertical fuel loadings, or are very homogenous across a landscape because of lack of past disturbance. However, areas may also be in Condition Class 3 because of recent large wildfires that created uncharacteristically large mosaics of early seral.

In the situations where Condition Class 3 occurs because of lack of past disturbance, vegetative conditions are often such that some type of mechanical treatment is desirable initially even in areas where prescribed fire would eventually be goal. The risk can be most effectively reduced through thinning that removes ladder fuels and natural and activity fuel abatement that reduces surface fuels loading and continuity. Ground based systems are the most economical method for achieving this because fuels can be yarded off the site. Where this is not feasible but is within the reach of helicopters, fuel abatement can be a challenge where high volumes of activity fuel are created. On site surface fuels can be difficult to mitigate, particularly with burning, in areas with deep and continuous fuel loadings. While prescribed fire can be an effective tool for reducing hazardous fuels, applications are risky in these types of areas as well as Condition Class 3 that have not been treated mechanically.

Condition Class 2 areas are generally easier to treat because they are not as far departed from natural conditions. Therefore, they are often less dense, have lower natural fuel loadings, and more diverse landscape pattern. In these areas, fewer acres may require some type of initial mechanical treatment before prescribed fire. In areas where mechanical treatments may be beneficial initially, there may be a lower volume of surface fuels to mitigate. In addition, prescribed fire may be more feasible as an initial treatment in some of these areas, potentially allowing more area to be treated.

The vegetative conditions that result from hazardous fuels treatments that reduce the risk of uncharacteristic wildland fire should be consistent with the values and features

of IRAs even though disturbance, particularly in mechanically treated areas, may be evident in the short-term. Over time this should become less noticeable, particularly in areas where activity fuels have been removed from the site or mitigated through burning. While vegetative communities that result from treatments may be more ecologically appropriate, their appearance may contrast with untreated (or undisturbed) areas. This may be particularly evident in non-lethal Fire Regimes where ladder fuels from conifer layers are reduced.

EXISTING PLANS

The Idaho Roadless Rule Management Themes were used to help categorize the management prescriptions in the Existing Plans as described above. Table 12 displays the amount of the wildland-urban interface areas in Ability to Treat categories. Based on this assessment, it appears the majority (95 percent) of the acres may allow for prescribed fire and mechanical tools to treat hazardous fuels though the actual allowed area may be less depending on Existing Plan management prescription. In regards to access, based strictly on the cross-walk to the Idaho Roadless Rule Management Themes, a majority (72 percent) of the IRA acres may allow access for hazardous fuels management. This would facilitate a greater opportunity to accomplish hazardous fuels treatments in Condition Class 3 areas. However, of the area available for mechanical, 23 percent is Access Restricted. The ability to accomplish hazardous fuels treatments in these areas are similar to that described for the 2001 Roadless Rule.

As with the cross-walk for tools, the actual amount of area where roads can be constructed or reconstructed may be less than estimated depending on the management prescription in the Existing Plan. Acres assigned to General Forest, Rangeland, and Grassland, which are 22 percent of the IRA acres (Table 12), are likely most consistent with the cross-walk to the Management Themes for hazardous fuels. However, of the acres cross-walked to Backcountry Restoration, which are about half (50 percent) of the IRA acres, the amount of area with an Existing Plan prescription that allows access may be less than represented by the cross-walk.

Table 12—Percent of Wildland-Urban Interface Acres in Inventoried Roadless Areas by Ability to Treat Categories for Existing Plans

Existing Plans[1]	Access		
Tools	Restricted	Variable	Not Restricted
Prescribed Fire the Only Tool Available	5%	0%	0%
Prescribed Fire and Mechanical Tools for Various Purposes	23%	50%	22%

[1]*Analysis does not include Forest Plan Special Areas*

The vegetative conditions that result from hazardous fuels treatments under Existing Plans could have variable impacts to the values and features of IRAs. Where hazardous fuels treatments are for habitat restoration or to reduce the risk of uncharacteristic wildland fire, impacts would likely be consistent over time. The greatest impact could occur in areas where hazardous fuels treatments are to reduce the risk of Unwanted Wildland Fire. In some cases, particularly in the non-lethal fire regimes, restoring or

maintaining vegetative conditions similar to the natural condition would reduce the risk of uncharacteristic as well as unwanted wildland fire effects. However, in stand-replacing (lethal) fire regimes, hazardous fuels treatments that benefit WUI may be fuel breaks or stand conditions that are not part of the natural vegetative condition. These types of treatments have a higher likelihood of impacting the values and features of IRAs.

IDAHO ROADLESS RULE

Under the Idaho Roadless Rule much of the WUI area (95 percent) is in a Management Theme that allows for prescribed fire and mechanical tools. Of this, 75 percent allows for road construction and reconstruction. The remaining area (5 percent) is in a Management Theme where prescribed fire is the only tool for hazardous fuels management. Under the Idaho Roadless Rule, hazardous fuels management in WUI would be to address unwanted wildland fire. A combination of prescribed fire and mechanical tools and unrestricted access provide the most opportunity to facilitate hazardous fuels management particularly in Condition Class 3 areas.

Table 13—Percent of Wildland-Urban Interface Acres in Inventoried Roadless Areas by Ability to Treat Categories for the Idaho Roadless Rule

Idaho Roadless Rule[1]	Access		
Tools	Restricted	Under Limited Exceptions	Not Restricted
Prescribed Fire the Only Tool Available	5%	0%	0%
Prescribed Fire and Mechanical Tools to Treat Unwanted Wildland Fire	20%	62%	13%

[1]Analysis does not include Forest Plan Special Areas

The vegetative conditions that result from hazardous fuels treatments under the Idaho Roadless Rule could have variable impacts to the values and features of IRAs. Hazardous fuels treatments under the Idaho Roadless Rule are to reduce the risk of Unwanted Wildland Fire. This could include a broad range of treatments like fuel breaks or stand conditions that are unlike the natural vegetative condition but meet the objectives of reducing wildfire risk.

Ability to Treat Hazardous Fuels in Municipal Watersheds

2001 ROADLESS RULE

In the case of the municipal water-supply areas, fewer acres are in Condition Class 3 (Table 11) compared to the WUI (Table 9). Therefore, and assuming that prescribed fire can be used more often as an initial treatment in Condition Class 2, a greater proportion of the municipal water-supply area could potentially be treated compared to WUI. In addition, prescribed fire is not as dependent on roads as are mechanical treatments. Prescribed fire may also be more acceptable in municipal water-supply areas than in WUI relative to risk of escape and smoke. Since only 25 percent of the municipal water-

supply acres in IRAs correspond with WUI this may provide more opportunity for prescribed fire treatments.

Existing Plans

Similar to WUI, it appears the majority (94 percent) of the acres may allow for prescribed fire and mechanical tools to treat hazardous fuels though the actual allowed area may be less depending on Existing Plan management prescriptions. In regards to access, based strictly on the cross-walk to the Idaho Roadless Rule Management Themes, more than half (53 percent) of the acres may allow access for hazardous fuels management. This is less area than for WUI, where 72 percent of the area is Not Restricted. However, as described for WUI, the actual acres may be less depending on the Existing Plan management prescriptions.

Table 14—Percent of Municipal Water-Supply Acres in Inventoried Roadless Areas by Ability to Treat Categories for Existing Plans

Existing Plans[1]	Access		
Tools	Restricted	Variable	Not Restricted
Prescribed Fire the Only Tool Available	6%	0%	0%
Prescribed Fire and Mechanical Tools for Various Purposes	41%	37%	16%

[1]*Analysis does not include Forest Plan Special Areas*

Idaho Roadless Rule

Compared to the WUI acres, slightly more are in Prescribed Fire the Only Tool Available (seven versus five percent), more are in Prescribed Fire and Mechanical Tools Available, Access Restricted (29 versus 20 percent), and less are Prescribed Fire and Mechanical Tools Available, Access Not Restricted (64 versus 75 percent). However, as described above, fewer acres are in Condition Class 3 in municipal water-supply areas than in WUI, and therefore having more area in prescribed fire only or in where access is limited, may not have the same consequences as areas that have greater proportion of Condition Class 3.

Table 15—Percent of Municipal Water-Supply Acres in Inventoried Roadless Areas by Ability to Treat Categories for the Idaho Roadless Rule

Idaho Roadless Rule[1]	Access		
Tools	Restricted	Under Limited Exceptions	Not Restricted
Prescribed Fire the Only Tool Available	7%	0%	0%
Prescribed Fire and Mechanical Tools to Treat Unwanted Wildland Fire	29%	58%	6%

[1]*Analysis does not include Forest Plan Special Areas*

Fire Prevention

The 2001 Roadless Rule has little potential impact on the fire prevention program (Table 16) since road construction or reconstruction is restricted to very limited exceptions. Therefore, there appears to be less potential for an an increase in human-caused starts due to roads into additional areas on Forests under the 2001 Roadless Rule. For Existing Plans, 63 percent of the IRAs could have some level of road construction or reconstruction while under the Idaho Roadless Rule the amount of area is 67 percent. Therefore, under the Existing Plans and Idaho Roadless Rule there could be an increase in human-caused starts into more areas on the Forests. This indicates there is a potential for an increase in the workload for the Fire Prevention program under the Existing Plans and Idaho Roadless Rule.

Table 16—Percent of Idaho Inventoried Roadless Area Acres With Restricted and Unrestricted Roads Potential by Alternative

Access	2001 Roadless Rule	Existing Plans	Idaho Roadless Rule
Access Restricted	100%	37%	33%
Access Under Limited Exceptions	0%	0%	60%
Access Variable	0%	48%	0%
Access Not Restricted	0%	15%	7%
Total	100%	100	100%

Conclusions - Ability to Treat

2001 Roadless Rule

Under the 2001 Roadless Rule, all acres with uncharacteristic wildland fire hazard in wildland-urban interface and municipal water-supply areas are available to treat with prescribed fire and mechanical tools. A majority of the acres are in Fire Regime Condition Class 2 and 3 therefore, much of the area is in need of treatment to reduce the risk of Uncharacteristic Wildland Fire. However, because access to accomplish fuels treatments is restricted, mechanical treatments would generally occur near the limited number of existing roads. This may compromise the ability to treat Condition Class 3 areas as these often benefit from an initial mechanical treatment before application of prescribed fire. This is particularly true in wildland-urban interface where risk of escapes and smoke are a concern to adjacent property owners.

Under the 2001 Roadless Rule hazardous fuels are defined uncharacteristic wildfire. In the non-lethal and mixed fire regimes (Fire Regimes I, II, and portions of III), restoring and maintaining natural vegetative conditions can reduce risks of stand-replacing wildfire. However, in lethal fire regimes, the natural vegetative conditions can still produce stand-replacing wildfire, which is often undesirable in wildland-urban interface. Therefore, restoring natural fire regimes may not reduce wildfire risk some wildland-urban interface areas. However, hazardous fuels treatments that move

conditions toward natural vegetative conditions are likely more consistent with IRA values and features.

Existing Plans

Based on the cross-walk of Existing Plan prescriptions to the Idaho Roadless Rule Management Themes, at least 94 percent of the WUI and municipal water-supply acres are available to treat with prescribed fire and mechanical tools. However, access is restricted on 23 percent of the area in WUI and 41 percent of the area in municipal water-supply areas. Also, not all Existing Plan management prescriptions that allow mechanical or road construction allow that activity for hazardous fuels management. In addition, some plans restrict hazardous fuels treatments to reducing uncharacteristic wildland fire while others include a broader category of unwanted wildland fire. Therefore, the amount of area that may allow prescribed fire, or with unrestricted access to treat hazardous fuels, particularly for the benefit of WUI, may actually be less than described by the cross-walk. Where hazardous fuels treatments are allowed, those that are to reduce the risk of uncharacteristic wildland fire may not reduce wildfire risk to wildland-urban interface. Those that address unwanted wildland fire generally provide a greater range of options particularly in lethal fire regimes. However, hazardous fuels treatments that restore or maintain natural vegetative conditions may be more consistent with the IRA values and features than those that reduce the risk of unwanted wildland fire.

Idaho Roadless Rule

At least 93 percent of the WUI and municipal water-supply acres are available to treat with prescribed fire and mechanical tools. Access is restricted on 20 percent of the WUI acres and 29 percent of the municipal water-supply acres. Therefore, 75 percent of the WUI acres and 64 percent of the municipal water-supply acres could be treated with prescribed fire and mechanical with road construction or reconstruction. Hazardous fuels are defined as those that contribute to Unwanted Wildland Fire. This allows for a greater range of vegetative treatments such as fuel breaks or stand manipulations that reduce the risk of stand-replacing fire. However, hazardous fuels treatments that create conditions that reduce the risk of Unwanted Wildland Fire may not be consistent with retaining IRA values or features.

Conclusion - Fire Prevention

Road construction or reconstruction may increase the number of human-caused starts into areas where this is currently low. Therefore, number of starts and acres burned by humans could increase under the Existing Plans and Idaho Roadless Rule. Because the 2001 Roadless Rule does not allow road construction or reconstruction except under very limited circumstances, this alternative would likely have little affect on starts or acres burned by human-caused fires.

Cumulative Effects

Fire exclusion and lack of treatment in IRAs may have contributed to the amount of area that is in Fire Regime Condition Classes 2 and 3. In the past several years, wildland fires have likely had the greatest impact on altering vegetative conditions. The wildland fires and management activities that have occurred would not affect the Ability to Treat described in this assessment. However, they may have reduced the need to treat hazardous fuels in any one area. Ability to Treat could be affected by a change in Management Theme under the Idaho Roadless Rule or revision or amendment under the Existing Plans. This could increase or decrease the amount of area assigned to the various combinations of access and tools.

Past road construction or reconstruction actions in IRAs may have affected the Fire Prevention program. Additional road construction or reconstruction under the Existing Plans and Idaho Roadless Rule could increase the amount of area that may be affected by human-caused wildland fires.

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